

AMENDMENTS TO THE CLAIMS:

Claims 1-7 (canceled)

8. (original) A method for forming a silicon oxide film, characterized by introducing a mixture gas mainly containing a gas containing oxygen and Kr gas into a process chamber, exciting plasma with a microwave, and directly oxidizing a silicon substrate surface placed in the process chamber, thereby forming a silicon oxide film on said silicon substrate surface.

9. (original) The method for forming a silicon oxide film according to claim 8, characterized in that said silicon oxide film is the gate insulating film of a transistor.

10. (original) The method for forming a silicon oxide film according to claim 8, characterized in that the oxygen partial pressure in said mixture gas is 2 to 4%, and the pressure in said process chamber is 800 mTorr (106 Pa) to 1.2 Torr (160 Pa).

11. (original) The method for forming a silicon oxide film according to claim 8, characterized in that said plasma is plasma excited with a microwave of a frequency of 900 MHz to 10 GHz.

12. (original) An apparatus for forming a silicon oxide film, characterized by comprising:

a process chamber in which a silicon substrate is placed, and
a waveguide tube for supplying a microwave in said process chamber,
and in that

a mixture gas mainly containing a gas containing oxygen and Kr gas is
introduced into said process chamber, plasma is excited with the microwave, and said
silicon substrate surface is directly oxidized, thereby forming a silicon oxide film on said
silicon substrate surface.

Claim 13 (canceled)

14. (new) An apparatus for performing the method of claim 8, comprising
means for introducing a mixture gas mainly containing a gas containing oxygen
and Kr gas into a process chamber,
means for exciting plasma with a microwave,
and means for directly oxidizing a silicon substrate surface placed in the process
chamber to form a silicon oxide film on said silicon substrate surface.

15. (new) A method for forming the semiconductor device of claim 1,
comprising introducing a mixture gas mainly containing a gas containing oxygen and Kr
gas into a process chamber, exciting plasma with a microwave, and directly oxidizing a
silicon substrate surface placed in the process chamber, thereby forming a silicon oxide
film on said silicon substrate surface.

16. (New) An MOS transistor having a silicon semiconductor portion for its channel region, a silicon oxide film formed on said silicon semiconductor portion and a gate electrode formed on said silicon oxide film, wherein

said silicon oxide film contains Kr, and

a threshold voltage of said MOS transistor is substantially equal to that of an MOS transistor having a silicon oxide film without Kr.